

Claims

[c1] What is claimed is:

1. An intra-field interpolation method for generating a target pixel value, the method comprising:
receiving a plurality of pixel values of an image field;
generating a first pixel difference set from the received pixel values using a first pixel difference algorithm;
generating a second pixel difference set from the received pixel values using a second pixel difference algorithm; and
blending the received pixel values according to the first pixel difference set and the second pixel difference set, to generate the target pixel value.

[c2] 2. The intra-field interpolation method of claim 1, further comprising:
low-pass filtering the received pixel values.

[c3] 3. The intra-field interpolation method of claim 1, wherein the pixel values of the image field comprises pixel values of at least one upper line of the target pixel value, and pixel values of at least one lower line of the target pixel value.

- [c4] 4. The intra-field interpolation method of claim 3, wherein the first pixel difference set is generated from the pixel values of the upper line and of the lower line.
- [c5] 5. The intra-field interpolation method of claim 3, wherein the second pixel difference set is generated from the pixel values of the upper line and of the lower line.
- [c6] 6. The intra-field interpolation method of claim 1, wherein each entry of the first pixel difference set is generated by calculating the differences among a plurality of pixel values of the image field along a corresponding direction.
- [c7] 7. The intra-field interpolation method of claim 1, wherein each entry of the second pixel difference set is generated by calculating the differences between a plurality of pixel values of the image field and a plurality of reference pixel values along a corresponding direction.
- [c8] 8. The intra-field interpolation method of claim 1, further comprising:
calculating the differences among a plurality of pixel values of an image line of the image field, to indicate a gradient characteristic of the pixel values of the image line.
- [c9] 9. The intra-field interpolation method of claim 8,

wherein the image line is an upper line of the target pixel value.

[c10] 10. The intra-field interpolation method of claim 8, wherein the image line is a lower line of the target pixel value.

[c11] 11. The intra-field interpolation method of claim 8, further comprising:
selecting an angle of blending referencing to the gradient characteristic of the pixel values of the image line.

[c12] 12. The intra-field interpolation method of claim 1, further comprising:
selecting an angle of blending according to the first pixel difference set and the second pixel difference set.

[c13] 13. The intra-field interpolation method of claim 12, further comprising:
storing information relating to the angle of blending resulted from the course of a previous step of selecting the angle of blending.

[c14] 14. The intra-field interpolation method of claim 13, wherein the angle of blending is selected referencing to the stored information, in addition to the first pixel difference set and the second pixel difference set.

- [c15] 15. The intra-field interpolation method of claim 1, wherein the blending step comprises:
weighted blending a first derived pixel value and a second derived pixel value of the received pixel values of the image field.
- [c16] 16. The intra-field interpolation method of claim 15, wherein the first derived pixel value is derived from a plurality of pixel values along a selected angle of blending.
- [c17] 17. The intra-field interpolation method of claim 15, wherein the second derived pixel value is derived from a plurality of pixel values along a normal axis.
- [c18] 18. The intra-field interpolation method of claim 1, wherein the blending step comprises:
calculating a first weighting factor according to pixel values along a selected angle of blending.
- [c19] 19. The intra-field interpolation method of claim 18, wherein the blending step further comprising:
weighted blending the received values of the image field according to the first weighting factor.
- [c20] 20. The intra-field interpolation method of claim 18, wherein the blending step further comprising:
calculating a second weighting factor; and

weighted blending the received values of the image field according to the first weighting factor and the second weighting factor.